

Tobacco Growers

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against the blue mold.

Anderson and Yocum said to a group of at least 150 that the strain of blue mold currently in Lancaster County is believed to be a Ridomil-resistant variety that is also believed to have been introduced a month ago through two shipments of transplant-size tobacco plants from North Carolina.

Ridomil is also a fungicide, which had been approved for use in seed beds for tobacco. A new version of the fungicide, Ridomil-Gold, has not been approved for use in seed beds because some blue mold has become resistant.

Some businesses in Southern states such as Florida and North Carolina have developed that emphasize raising tobacco plants in floating seed beds.

The seed bed medium floats above water and the moisture is wicked up to the seed and plant. The warm, and constant moisture environment presents optimum conditions for the growth of fungus. Ridomil use allowed growers to use the floating beds to produce a higher number of quality tobacco plants for sale for transplanting into fields.

However, with the constant and widespread use of Ridomil in the floating beds, the blue mold developed resistance.

Therefore, the newer version of the fungicide can no longer be used in seed beds, although the remaining stocks of the older version of Ridomil are still labeled for such use.

During a spring tobacco meeting, Yocum and Anderson had warned local growers about purchasing and using transplants that may possibly carry the resistant variety of disease.

Apparently, their warnings were not completely heeded.

Yocum said that while blue mold is not a surprise disease in the area, the traditional variety (which continues to be controlled by Ridomil in the field) normally only appears in the state later in the season.

He explained that the microscopic spores of the blue mold become airborne and travel north and east, carried with storms.

The prevailing wind patterns in North America usually take the shape of a giant "U" stretching from the Northwest down south through the Mid West or further, and then back up into the Northeast.

Through the seasons, the position of the "U" changes north and south across the continent. The "U" generally travels north and south, as the earth changes its relationship to the sun.

Here, in central Pennsylvania, sometimes storm systems travel off the East Coast farther south and sometimes farther north.

Sometimes the northeast direction of the "U" remains to the west of central Pennsylvania, taking a course up the Ohio Valley, through northwest and northcentral Pennsylvania.

Blue mold cannot tolerate cold temperatures and only overwinters in southern North America, such as in wild tobacco in Texas, in southern Florida, in Cuba, and in South America, Yocum told the group.

The spores (the "seeds" of fungi are called spores) are carried with the wind and generally creep north and eastward as the "U" dips farther south as the summer progresses.

Some years central Pennsylvania is spared, other times not.

States involved with tobacco production have long recognized this relationship between the spread of airborne disease and weather patterns and have set up a reporting system, so that the spread of disease can be anticipated and growers can take appropriate action.

Yocum said that some of the other states involved with monitoring diseases have also had the disease, though they have both types, resistant and nonresistant.

The nonresistant variety is usually the first one to show up, carried by the winds and storms. It was not yet detected in Pennsylvania and the weather was recently not conducive to its movement here.

That is part of the reason why officials believe the blue mold was transported into the state through contaminated tobacco transplants trucked into the state.

Yocum said that this year the fungus appeared very early in Florida and jumped north.

"We would have gotten it anyway, because it travels with storm fronts," Yocum said. "All (that happened with transporting infected plants) was hasten development of the disease."

In order to fight this fungus, the Pennsylvania Department of Agriculture petitioned for and received emergency approval for the off-label use of the Acrobat MZ fungicide.

According to Yocum, most of the transplants from North Carolina did have the blue mold. Since then, Anderson said he has been on 50 to 60 farms and said he can find it in almost every seed bed.

He said that if the rains come as had been forecast that it could soon be everywhere in the county.

It started raining during the meeting.

Nonirrigated fields in the region have been very dry, causing some spiking of corn. That has kept the mold from becoming widespread in fields.

The mold spores can fall with the rain and need the moisture on the surface of the tobacco leaf in order to grow.

The disease causes spotting and browning of leaves and the damage is irreparable, though the fungicides can stop further damage.

According to Yocum, there are two fungicides that can be used — Dithane DF as a preventative, and Acrobat MZ which has preventative and limited systemic properties.

(Dithane is in the mancozeb family and it is also in Acrobat MZ.)

The systemic properties of Acrobat MZ can kill the mycelium (the actual body of the fungus that is generally not seen) in the plant and thus has some curative properties, but it's only systemic locally.

Both Acrobat MZ and Dithane DF have strong preventative properties because they kill the spores when they land on the leaf.

The fact that the main strategy for fighting blue mold depends on interacting with the disease on the surface of the plant means that spraying techniques need to ensure complete plant coverage.

Sprayers will probably need to have different nozzles and arms attached in order to effectively coat the plant.

Many of the tobacco growers in the region use mule power, and Anderson and Fleming rigged Beiler's boom sprayer to tackle eight rows.

Starting with a boom sprayer (Turn to Page A37)

Keys to Success for Controlling Blue Mold in Tobacco with ACROBAT MZ

- ✓ Initiate ACROBAT MZ applications as recommended by the Blue Mold Advisory
- ✓ Use ACROBAT MZ in a preventative foliar spray program to manage blue mold
- ✓ Direct application of ACROBAT MZ to the plant (not the soil) and provide thorough coverage over leaves and bud of plant
- ✓ Use hollow cone or disk-core nozzles to break spray into small droplets for thorough plant coverage
- ✓ Use multiple nozzles per row that direct the spray over the entire plant
- ✓ Add drop nozzles as the plant grows to insure thorough plant coverage
- ✓ Use high volume sprayer
- ✓ Spray pressures greater than 100 PSI provide the best results
- ✓ Spray only as many rows per pass with the sprayer as the equipment will effectively deliver fungicide to the target leaves.
- ✓ Make application to dry foliage ACROBAT MZ is rainfast in 3 hours
- ✓ Keep the spray interval close (5-7 day intervals) under strong disease pressure
- ✓ Refer to ACROBAT MZ product label for complete application and rate details

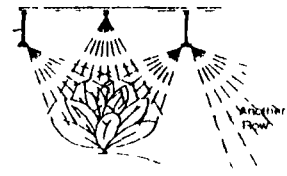
Application Rates and Timing for Blue Mold Control with ACROBAT MZ in Field Grown Tobacco

Weeks of Growth After Transplant	Rate of ACROBAT MZ (Pounds of Product/Acre)	Water Output (Gallons/Acre)
Recently transplanted to 3 weeks after transplanting	0.5	20
3-4 weeks after transplanting (knee high)	1.0	40
4-5 weeks after transplanting (waist high)	1.5	60
6-7 weeks after transplanting (chest high)	2.0	80
7 weeks after transplanting and beyond	2.5	100

Note: Above directions are for dilute sprays. If concentrate sprays are used, adjust rate and volumes proportionately.

Application to Small Plants (transplanting up to 3 weeks)

- ◆ Use one hollow cone nozzle over the row and one on each side of the plant
- ◆ Apply 20 gallons per acre of water volume
- ◆ Spray at pressures above 60 PSI to achieve good droplet dispersion



The Cost Of Spray Nozzle Conversion

8 Rows = 9 Drops on existing Boom Sprayer Modification Costs

Existing spray boom had 15 spray nozzles on 20 inch center to cover 285 inches (23.75 feet)
Modified spray boom has 17 spray nozzles on 19 inch center to cover 304 inches (25.33 feet)

Drops

Part No.	Description	Quantity	Unit Costs	Total Costs
2135415NYB	15" Hose Drops	9	\$3.8250	\$34.43
8600214NYB	Swivle Bodys	9	\$4.9500	\$44.55
DVP6	Orifice Disc	16	\$0.5700	\$9.12
DC23NY	Core	16	\$0.6225	\$9.96
8079PP50	Strainer	16	\$0.5325	\$8.52
33942	Nozzle Blank Cap	2	\$0.1600	\$0.32

\$106.90

Rows

DVP6	Orifice Disc	8	\$0.5700	\$4.56
DC23NY	Core	8	\$0.6225	\$4.98
8079PP50	Strainer	8	\$0.5325	\$4.26
3NTT12	Nozzle Tee	2	\$0.4200	\$0.84
33942	Nozzle Blank Cap	2	\$0.1600	\$0.32
3812	Poly Nozzle Nut	2	\$0.0800	\$0.16
AA11134	Clamp	2	\$2.1975	\$4.40

\$19.52

Total Cost = \$126.41

Cost / Row = \$15.80

This cost information for converting to cone spray nozzles to ensure top and bottom tobacco leaf protection when spraying the Acrobat MZ product was compiled by Lancaster County Penn State Extension Agent Robert Anderson and Mike Fleming, with American Cyanamid, makers of Acrobat MZ. Compared to the value of the crop, the cost for purchasing the proper spray heads is miniscule. While the specific spray head manufacturers are in no way endorsed by Penn State, these were selected because they will perform the job. In addition, according to John Lake, with the Pennsylvania Department of Agriculture Bureau of Plant Industry, while Acrobat MZ was similarly approved for use against blue mold last year (though it wasn't really needed because weather patterns protected the area), it was approved this year with the stipulation that spraying equipment provide complete plant coverage. The Acrobat MZ has only local systemic properties and new tobacco plant growth is not protected unless it too is sprayed. Acrobat MZ stops sporulation, and thus can stop the blue mold, which is believed to be a variety already resistant to another common fungicide, Ridomil.